REMARKS

Favorable reconsideration of the present application is respectfully requested.

Claims 3 and 16 were again rejected under 35 U.S.C. § 102 as being anticipated by Lorenz et al. Additionally, Claims 3-6 and 16-19 were again rejected under 35 U.S.C. § 103 as being obvious over Lorenz et al in view of JP '212, corresponding to the U.S. patent to Azuma et al. Applicants wish to thank examiner Martin for the courtesy of an interview on September 5, 2007 at which time the outstanding rejections were discussed. No agreement was reached at that time pending the examiner's review of a written response.

As was discussed during the interview, Azuma et al describes a conventional method for control of a fuel cell vehicle:

> In electric vehicles the fuel cell has been utilized mainly as a supply source of electric power to an electric motor, in accordance with the vehicle load. A battery is utilized to compensate for poor output of the fuel cell, which occurs when the vehicle rapidly accelerates and the load increases, and is adapted to be charged by power from the fuel cell 51 during periods of light load. (Col. 1, lines 44-51).

That is, the fuel cell output is conventionally varied to satisfy the vehicle load requirement, and the battery output makes up for any shortfall. According to the invention in Azuma et al, the control of the output of the fuel cell is not dependent on the load requirement but is instead dependent on the state of charge of the battery. If a load increase is sensed, the higher load requirement is satisfied by the battery output. Col. 7, lines 27-40. The fuel cell is then controlled to respond to the resulting reduced battery state of charge and so can be operated at a relatively high efficiency. For example, if the battery charge falls below 60%, the fuel cell outputs 10 kW at a relatively low efficiency (col. 6, lines 29-40). However higher states of battery charge permit the fuel cell to output less power at higher efficiency (col. 5, line 64 to col. 6, line 25). Thus while control of the output of the fuel cell

in Azuma et al is not directly dependent on the load requirement, it is nonetheless dependent on the state of a parameter other than the fuel cell gas flow rate (battery state of charge).

According to a feature of the invention, on the other hand, the output of said fuel cell corresponds to a working point corresponding with a measured gas flow rate-relating quantity which relates to a flow rate of the gas supplied to the fuel cell. For example, it may correspond to a point of highest energy conversion efficiency of the fuel cell. Referring to the non-limiting Figures 2-4, a working point may be determined for a measured gas flow rate, e.g., a working point corresponding to a maximum product of the output voltage and current at that flow rate. This may be point P_m which is the point of highest energy conversion efficiency (page 17, lines 11-16; step S18 of Figure 2). The output of electric power of the fuel cells at the specified working point may then be determined (step S20; page 20, lines 21-24). The difference between the output of the fuel cells at the specified working point and that required of the inverter may then be determined at step S22, and the secondary battery supplied with, or drained of, power at steps S24-S46 based on this determination.

Concerning the rejection under 35 U.S.C. § 102, it has already been explained that Lorenz et al is directed to a fuel cell working alone to provide power to a vehicle. Lorenz et al therefore addresses a problem unique to such systems: preventing a load that differs from the maximum current output of the fuel cell. To this end, Lorenz et al determines the required load from the accelerator pedal position FP (column 2, lines 56-58) and controls the oxidant flow to the fuel cell so that the fuel cell output does not exceed the vehicle load (block 28). Conversely, if the required load is greater than the maximum power currently available from the fuel cell, the load requirement value is reduced to a corrected value P_{corr} which is the same as the maximum fuel cell power P_{max} (column 3, lines 11-36).

Thus Lorenz et al does not provide a battery which accumulates and/or outputs electric power to satisfy the load, only a starter battery. Lorenz et al also fails to specify a

working point associated with an output current/voltage characteristic of a fuel cell corresponding to a measured gas flow rate relating quantity, to determine a first amount of electric power to be taken out of the fuel cells which is required to activate the fuel cells at the specified working point, but instead reduces the determined load requirement to equal a maximum output of the fuel cell. It may therefore be appreciated that the invention forth in Claims 3 and 16 clearly defines over Lorenz et al.

As for the rejection of Claims 3-6 and 16-19 under 35 U.S.C. § 103 as being obvious over Lorenz et al in view Azuma et al, since the underlying object of Lorenz et al is to equalize the fuel cell output and vehicle load under all operating conditions (see, e.g., col. 1, lines 38-33; col. 3, lines 38-59), a load battery could not be used therein because it would be impossible to charge the battery or to drain the battery to satisfy a load.

Moreover, as discussed above and during the interview, the teaching of Azuma et al is to maximize system efficiency by operating the fuel cell to provide an output related to the battery state of charge. It does not teach specifying a working point associated with an output electric current-output voltage characteristic of the fuel cell corresponding to a measured gas flow rate-relating quantity, which quantity relates to a flow rate of the gas supplied to the fuel cell, and so Azuma et al could not suggest modifying Lorenz et al to provide this feature.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

Respectfully submitted,

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